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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,122	11/25/2003	Toshio Tsujimoto	245926US0XDIV	4386
22850	7590	07/24/2006	EXAMINER	
C. IRVIN MCCLELLAND OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			SONG, MATTHEW J	
			ART UNIT	PAPER NUMBER
			1722	

DATE MAILED: 07/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/720,122

Applicant(s)

TSUJIMOTO ET AL.

Examiner

Matthew J. Song

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 14-16 and 18-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-16 and 18-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/15/2006 has been entered.

### ***Withdrawn Rejections***

2. Applicant's arguments, see page 4 of the remarks, filed 5/15/2006, with respect to the 35 U.S.C 102 rejection in view of Watanabe et al (EP '429) have been fully considered and are persuasive. The rejection of claims 14-16 and 21 has been withdrawn. Watanabe et al does not teach the promoter layer is on the inside surface of the crucible.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

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evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 14-16 and 18-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hansen et al (US 5,980,629) in view of Watanabe et al (US 6,106,610).

In a method of forming a crucible for production of silicon single crystals, note entire reference, Hansen et al teaches a crucible has inner and outer coatings of a devitrification promoter (col 3, ln 1-50 and col 4, ln 40-55). Hansen et al also teaches granular polycrystalline silicon is loaded into the crucible (col 3, ln 50-67) and the devitrification promoter is preferably barium, magnesium, strontium or beryllium (col 6, ln 20-5). Hansen et al also teaches devitrification promoters includes metal oxides, carbonates, oxalates and ion pairs of a metal cation and organic anions (col 6, ln 1-65), this clearly suggests applicant's metal salts, metal organic acid salt, and barium carbonate.

Hansen et al does not teach the crystallization promoter is dispersed in a silica matrix. Hansen et al is not particular about the method used to coat the surface of the crucible.

In a method of forming a crucible, note entire reference, Watanabe et al teaches a crystallization promoter can be used either alone or as a mixture with a powder of synthetic silicon dioxide to form a translucent quartz glass layer. Watanabe et al teaches depositing a synthetic silicon dioxide powder sufficiently impregnated with the aqueous solution, and the layer is formed as a coated film or a solid solution layer on the surface (col 3, ln 30-65 and col 4,

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In 1-35), this reads on applicant's crystallization promoter dispersed in a silica matrix. Watanabe et al also teaches a crystallization promoter layer is fused to a base body (col 5, ln 5-30).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Hansen et al by fusing the layer with a crystallization promoter dispersed in a silica matrix to the base body as taught by Watanabe et al to improve adherence and improve safety by reducing the risk of inhalation and ingestion of the promoter (col 8, ln 10-35).

Referring to claim 15, the combination of Hansen et al and Watanabe et al does not disclose the claimed method of obtaining the crucible using a partial hydrolyzate of alkoxysilane oligomer, which is a product-by-process claim and the patentability determination of a product-by-process claim is based on the patentability of the product and does not depend on its method of production (MPEP 2113). The combination of Hansen et al and Watanabe et al teaches a crucible, which meets all of the claimed product limitations of claim 15. The same arguments apply for claims 16 and 18-20, which specify the liquid used to obtain the crystallization promoter layer.

Referring to claims 21-23, the combination of Hansen et al and Watanabe et al teaches a crystallization promoter layer **24, 26** on the inside and outside surfaces of the crucible. ('629 Fig 1).

### ***Response to Arguments***

5. Applicant's arguments filed 5/15/2006 have been fully considered but they are not persuasive.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on

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obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Watanabe et al teaches a method of forming a crystallization promoting layer by supplying a silicon dioxide powder containing a promoter and fusing the crystallization promoter layer to a base body so that it may adhere to the base body (col 5, ln 1-30). Hansen et al does not limit the method of coating the crucible and clearly teaches the crucible surface can be coated by any method which deposits the devitrification promoter onto the surface (col 7, ln 35-45). Hansen et al also teaches methods of improve adherence is desired and improves safety (col 8, ln 10-35). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Hansen et al by coating with crucible using the process taught by Watanabe et al to improve adherence of the promoter by fusing the promoter to the base body.


### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Song whose telephone number is 571-272-1468. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Matthew J Song  
Examiner  
Art Unit 1722  
~~MOGENDRA N. GUPTA~~  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700

MJS  
July 16, 2006